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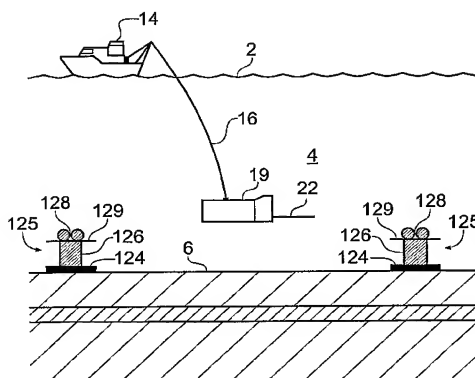
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(54) Title: ELECTROMAGNETIC SURVEYING FOR RESISTIVE OR CONDUCTIVE BODIES



(57) **Abstract:** A method of analysing electromagnetic survey data from an area of seafloor (6) that is thought or known to contain a conductive or resistive body, such as a subterranean hydrocarbon reservoir (12), is described. The method includes providing electric field data and magnetic field data, for example magnetic flux density, obtained by at least one receiver (25) from a horizontal electric dipole (HED) transmitter (22) and determining a vertical gradient in the electric field data. The vertical gradient in the electric field data and the magnetic field data are then combined to generate combined response data. The combined response data is compared with background data specific to the area being surveyed to obtain difference data sensitive to the presence of a subterranean hydrocarbon reservoir. Because the combined response data are relatively insensitive to the transverse electric (TE) mode component of the transmitted signal, the method allows hydrocarbon reservoirs to be detected in shallow water where the TE mode component interacting with the air would otherwise dominate. Furthermore, because there is no mixing between the TE and transverse magnetic (TM) modes in the combined response data, data from all possible transmitter and receiver orientations may be used. The background data may be provided by magneto-telluric surveying, controlled source electromagnetic surveying or from direct geophysical measurement.



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